

DoD Global Influenza Surveillance Program: *Influenza Surveillance at AFIOH*

Overall Lab Surveillance

Total Specimens Collected

- Collected in Week 04: 74
- Season Total: 1,345

Total Influenza Isolates

Identified in Wk 04; Cumulative

- Influenza A: 12 ; 118
- Influenza B: 7 ; 23

Total Influenza Subtyped

Identified in Wk 04; Cumulative

- A/H1N1: 1 ; 6
- A/H3N2: 0 ; 55
- B/HongKong: 0 ; 3
- B/Shanghai: 0 ; 2

Sentinel Site Lab Surveillance

Sentinel Specimens Collected

- Collected in Week 04: 47
- Season Total: 823

Sentinel Influenza Isolates

Identified in Wk 04; Cumulative

- Influenza A: 8 ; 82
- Influenza B: 2 ; 6

Sentinel Influenza Subtyped

Identified in Wk 04; Cumulative

- A/H1N1: 1 ; 6
- A/H3N2: 0 ; 40
- B/Hong Kong: 0 ; 3
- B/Shanghai: 0 ; 1

Overseas Research Lab Surveillance

Research Specimens Collected

- Collected in Week 04: 3
- Season Total: 287

Research Influenza Isolates

Identified in Wk 04; Cumulative

- Influenza A: 0 ; 1
- Influenza B: 3 ; 17

Research Influenza Subtyped

Identified in Wk 04; Cumulative

- A/H3N2: 0 ; 1
- B/Shanghai: 0 ; 1

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Week 04

22-28 January 2006

Current WHO Phase of Pandemic Alert: **PHASE 3**

*Phase 3 = a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans. *The designation of phases, including decisions on when to move from one phase to another, is made by the Director-General of WHO.*

Source: [WHO](#)

Influenza (02 Oct - Present)

141 influenza isolates

118 Influenza A; 23 Influenza B

14% of completed specimens were positive for an influenza virus: 12% influenza A; 2% influenza B.

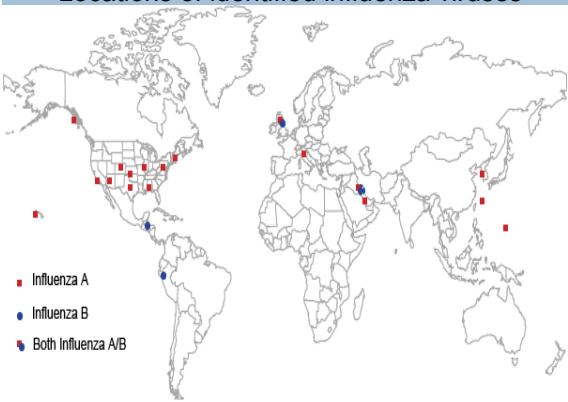
Influenza A

A (H1N1): 6
A (H3N2): 55
Un-subtyped: 57

Influenza B

B (Hong Kong): 3
B (Shanghai): 2
Un-subtyped: 18

Locations of identified influenza viruses



Locations of identified influenza subtypes



Vaccination Status

94% of the Active Duty Air Force, 86% of Air National Guard, and 75% of Air Force Reserve are currently vaccinated (as of 31 Jan 06). (Data gathered by MILVAX)

Update: Human Avian Influenza (H5N1)

WHO has confirmed a total of 165 cases of human avian influenza (H5N1) and 85 have died. See pg 6 for the cumulative cases from WHO. Also, click here [WHO update](#) for the situational update.

There have been no confirmed cases of H5N1 in US military soldiers.

Influenza Outbreaks / News

At this time, AFIOH has not been notified of influenza outbreaks at any of the MTFs.

AFIOH Report Overview

This report summarizes the status of all respiratory viral cultures processed at the AFIOH laboratory, which includes specimens collected from DoD beneficiaries at 40 tri-service sentinel sites and non-sentinel sites, as well as from foreign nationals through DoD overseas research laboratories (Armed Forces Institute of Medical Sciences [AFRIMS], the Naval Medical Research Center Detachment [NMRC-D], and the US Army Center for Health Promotion and Preventive Medicine West [CHPPM-W]).

Please visit our [website](#) to review the "Sentinel Site Surveillance Report" for detailed information on our sentinel site program and specimens submitted by our sentinel sites.

Overall Laboratory Surveillance

Week 04 overview

- Specimens "collected"** in Week 04. 74 specimens have been collected and received from 24 sites (16 sentinel and 7 non-sentinel, and 1 overseas research lab). 22% (n=16) of these specimens have a completed result (13 influenza A and 3 influenza B).
- Specimens "received"** in Week 04. 347 specimens were received at AFIOH during Week 04 and are undergoing processing at this time. 239 (69%) were submitted by NMRC-D in Peru and were collected in Weeks 40-03. Remaining specimens were collected in Weeks 50-04.

MAP: Geographic coverage of DoD Influenza Surveillance*

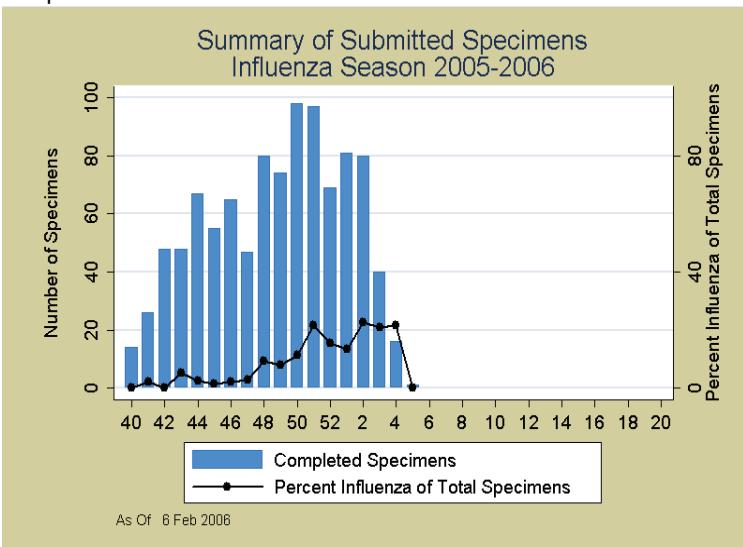


* As determined from specimen submissions. Even though an entire location is

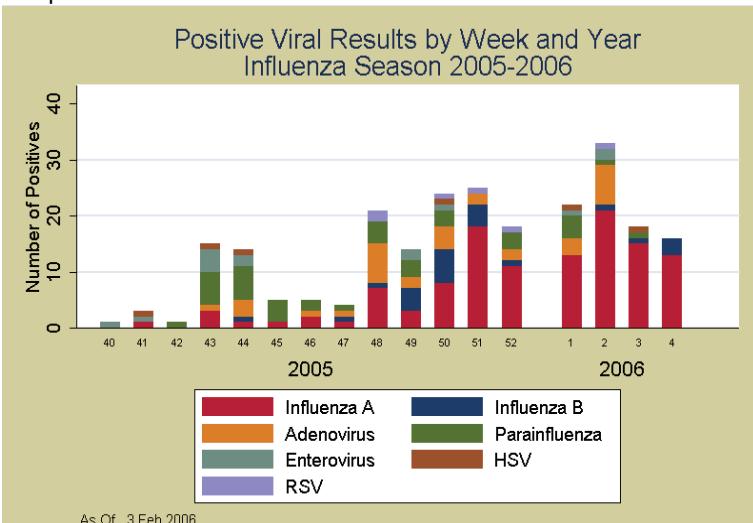
Season overview

Since 02 October 2005, 1,345 specimens were received by the AFIOH laboratory and 74% (n=997) have a completed result. Of these, 76% (n=758) were negative and 24% (n=239) were positive for a respiratory virus. The majority (n=118) of those with a positive result were influenza A, 16% (n=39) were parainfluenza, 14% (n=33) were adenovirus, 10% (n=23) were influenza B, 6% (n=14) were enterovirus, 3% (n=6) were RSV, and 3% (n=6) were HSV (Graph 2). This is unlike previous seasons, when the majority of the specimens positive for a respiratory virus were adenovirus. One possible explanation may be a shift from passive to active influenza surveillance among sentinel sites.

Graph 1



Graph 2



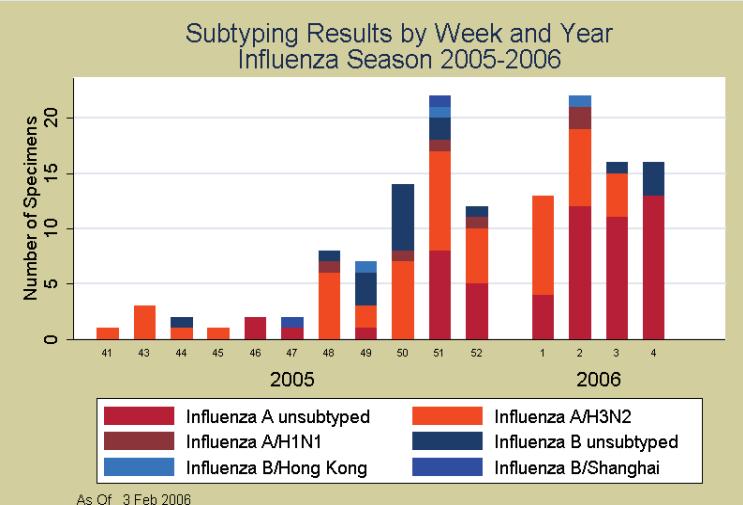
Influenza Subtype and Sequence overview

Overall, 14% (n=141) of the completed specimens were positive for an influenza virus (Graph 1): 12% influenza A; 2% influenza B (Graph 1). Of these, 47% (n=66) have been subtyped: 55 influenza A/H3N2, 6 influenza A/H1N1, 3 influenza B/Hong Kong, and 2 influenza B/Shanghai (Graph 3).

Five (83%) H1N1 sub-typed isolates have been sequenced and there are a few notable amino acid changes from the influenza A/New Caledonia vaccine strain.

Additionally, 35 H3N2 sub-typed isolates have been sequenced and appear to closely match the vaccine strain. Several more H3N2 isolates are still undergoing molecular sequencing and the final results are not available at this time.

Graph 3



Influenza Overview continued

All influenza isolates are typed and the AFIOH laboratory plans to subtype all OCONUS isolates and a portion of CONUS isolates.

Location. Only influenza A has been identified among CONUS sites. Additionally, all those sub-typed from CONUS sites have been identified as the H3N2 strain. Both influenza A and B have been identified in Europe and the Middle East and A/H3N2, A/H1N1, B/Hong Kong and B/Shanghai have been sub-typed from these isolates. Although not all the specimens have been completed from Peru, influenza B has been the only type identified in both Central and South America at this time and B/Shanghai has been sub-typed (Table 2).

DoD beneficiary status. The majority (n=67) of the isolates were collected from active duty members, while 26% (n=37) were from children, 11% (n=15) were from spouses, and 16% (n=22) were from non-DoD beneficiaries.

Vaccination status. Vaccination status has been identified on 30% (n=42) of the influenza-positive patients. This information was obtained from the influenza surveillance questionnaires completed by sentinel sites. 36% (n=15) were vaccinated > 2wks prior to their illness (1 patient was vaccinated 2 days prior to being ill and therefore had not developed proper immunity). Five of the specimens collected from the vaccinated patients have been sub-typed, 3 were identified as H3N2 and 2 were H1N1.

Table 2. Influenza by SITE and REGION

Site by REGION	Sentinel Status	Influenza A			Influenza B			Total Influenza
		Not-subtyped	H3N2	H1N1	Not-subtyped	Hong Kong	Shanghai	
OCONUS								
Pacific Rim								
121st Army, S. Korea	Sentinel		3	3				6
Andersen AFB, Guam	Sentinel		3					3
Camp Zama, Japan	Sentinel		3					3
NH Okinawa, Japan	Sentinel		1					1
NH Yokosuka, Japan	Sentinel		2					2
Osan AB, S. Korea	Sentinel	2	2	1				5
Saipan, CMNI	Research lab		1					1
Europe								
Aviano AB, Italy	Sentinel		1					1
RAF Lakenheath, U.K.	Sentinel	1	1		2	2		6
Deployed								
Ali Al Salem AB, Kuwait	Sentinel		1					1
Al Udeid AB, Qatar	Sentinel			1				1
Camp Arifjan, Kuwait	Sentinel		1	1		1		3
Camp Buehring, Kuwait	Sentinel						1	1
Central America								
CHPPM-W, Honduras	Research lab				3	1		4
South America								
NMRC-D, Peru	Research lab				13			13
CONUS								
East North Central								
Scott AFB, IL	Sentinel		1					1
East South Central								
Maxwell AFB, AL	Non-Sentinel	2						2
New England								
NHC New England, CT	Sentinel	1						1
Mid Atlantic								
McGuire AFB, NJ	Sentinel	1	1					2
Mountain								
USAF Academy, CO	Sentinel	21	8					29
Buckley AFB, CO	Non-Sentinel	1						1
Peterson AFB, CO	Non-Sentinel	1						1
Luke AFB, AZ	Non-Sentinel	3	2					5
Pacific								
CGS Ketchikan, AK	Sentinel		2					2
Elmendorf AFB, AK	Sentinel	2	1					3
NMC San Diego, CA	Sentinel		1					1
Travis AFB, CA	Sentinel	2						2
Tripler AMC, HI	Sentinel		7					7
Edwards AFB, CA	Non-Sentinel		1					1
South Atlantic								
Andrews AFB, MD	Non-Sentinel	2	1					3
West South Central								
Sheppard AFB, TX	Sentinel	2						2
Brooks City-Base, TX	Non-Sentinel	5	3					8
Goodfellow AFB, TX	Non-Sentinel		1					1
Lackland AFB, TX	Non-Sentinel	7	4					11
Tinker AFB, OK	Non-Sentinel	4	3					7
Total Influenza		34	47	6	18	3	2	141

Area of Responsibility (AOR)

Since 02 October 2005, influenza isolates identified from each AOR are as follows: NORTHCOM (55%), PACOM (23%), CENTCOM (4%), EUCOM (5%), and OTHER (13%). See Table 1. for an overview of this season's results through Week 04.

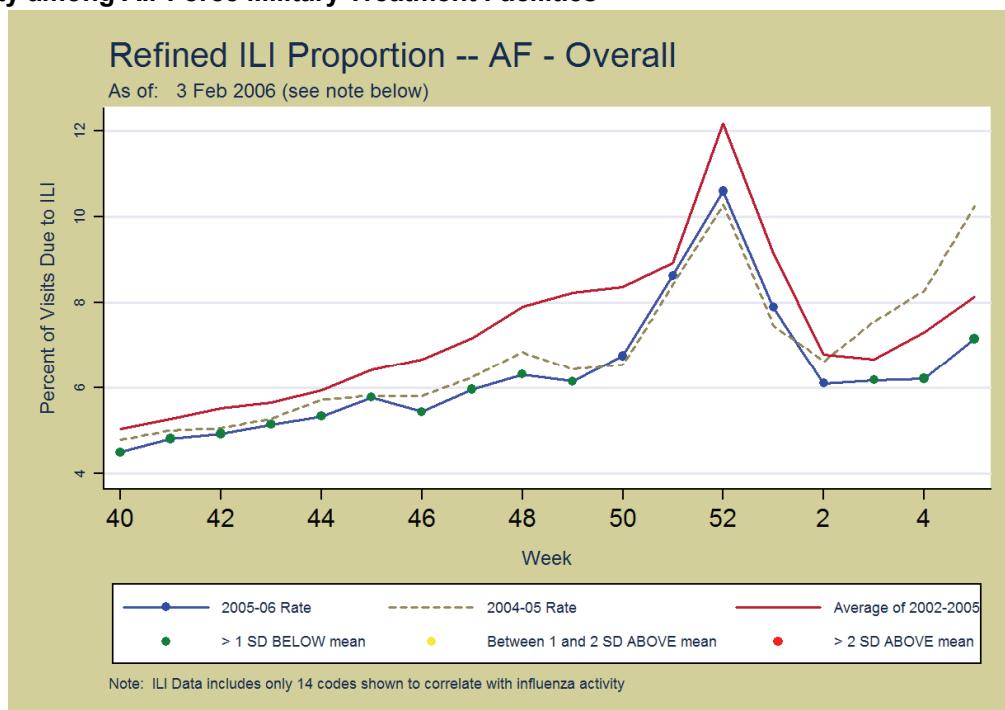
Note: Sentinel sites are distributed among the AOR as follows: 100% of submitting CENTCOM and EUCOM sites, 44% of the NORTHCOM sites, and 87% of the PACOM sites. The "OTHER" AOR category includes specimens collected from foreign nationals at the overseas research lab locations and are not considered sentinel sites.

Table 1. Laboratory Results by Area of Responsibility (AOR), Week 04 and Season Totals.

Result	Area of Responsibility										ALL SITES	
	CENTCOM		EUCOM		NORTHCOM		PACOM		OTHER			
	Week	Season	Week	Season	Week	Season	Week	Season	Week	Season		
Influenza A		4		3	13	78			33		118	
Influenza B		2	1	4					2	17	23	
Adenovirus				3		22			5		33	
Parainfluenza		1		9		24			3		39	
Enterovirus		2		4		4			3		14	
HSV		1		2					1		6	
RSV						5			1		6	
Negative		46		90		398			186		38	
Pending			5	14	44	89	8	22	1	223	348	
TOTAL RECEIVED	0	56	6	129	57	620	8	254	3	286	1345	

Influenza-Like Illness (ILI)*

Overview. As of 3-Feb-06. Influenza-like illness (ILI) activity among Air Force MTFs has remained at 6% for Week 04, following a similar, yet slightly lower, pattern as the average. The standard deviation (SD) is calculated weekly. It is important to note that data in Week 04 is not complete and may vary from next week's graph.

Graph 3. ILI Activity among Air Force Military Treatment Facilities

Additional Influenza Surveillance: Army MEDCENS

The Army performs influenza surveillance at 6 Army Medical Center (MEDCEN) locations (Dwight David Eisenhower Army Medical Center [DDEAMC], Walter Reed Army Medical Center [WRAMC], Brooke Army Medical Center [BAMC], Madigan Army Medical Center [MAMC], Tripler Army Medical Center [TAMC], and Landstuhl Regional Medical Center [LRMC]), two of which are included in AFIOH's sentinel site surveillance network (see map to right). Any influenza positive specimen identified from TAMC or LRMC in the AFIOH portion of this report are also included in the "Army MEDCEN" report.



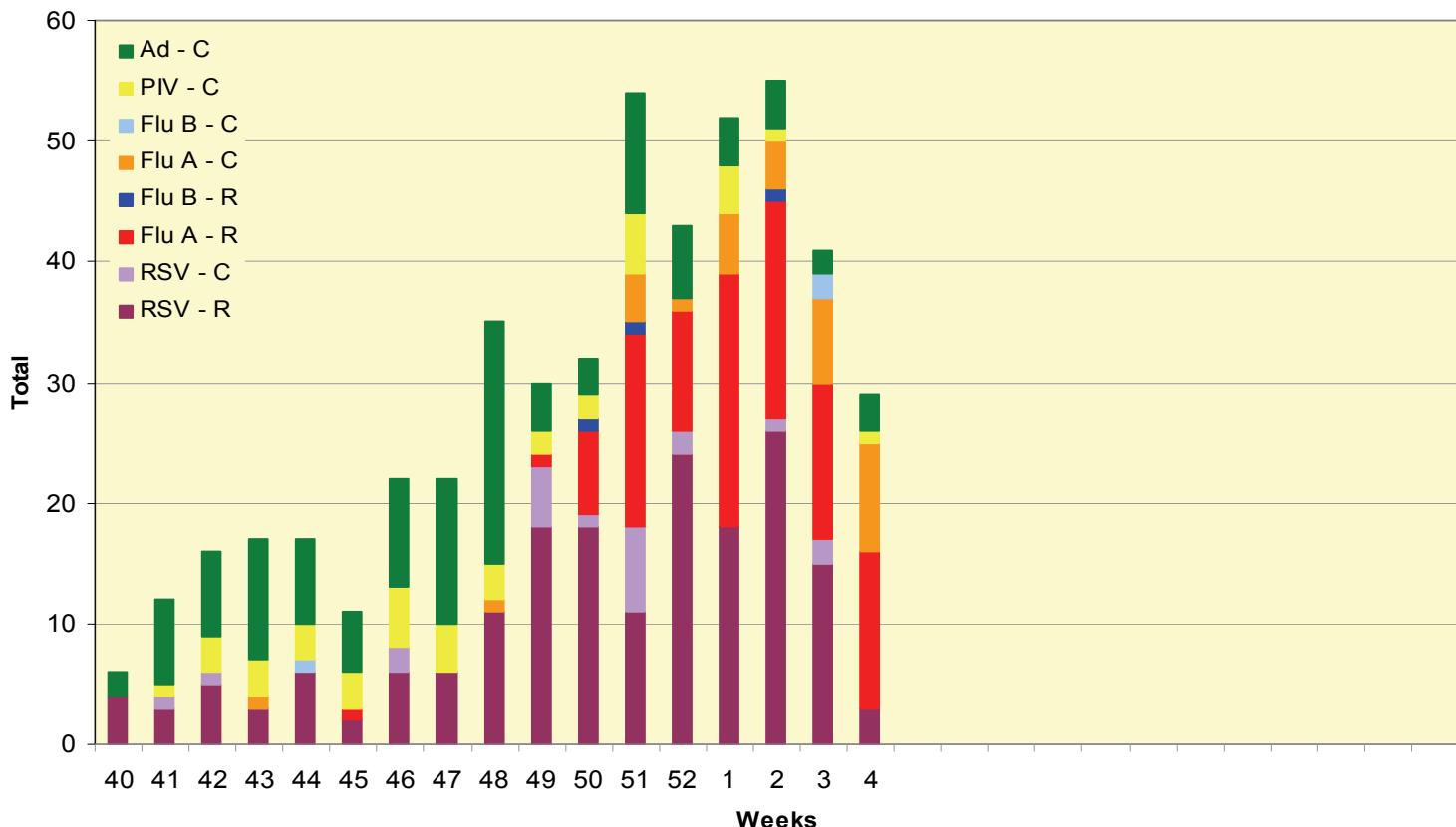
The Army MEDCEN sites are major medical centers equipped with the capability of detecting respiratory viruses, including influenza. It is important to note that the methodology varies at each site (i.e., testing procedures include direct fluorescent-antibody [DFA], various rapid antigen tests, culture, and polymerase chain reaction [PCR]) and reporting is routine, but varies from site to site (i.e., weekly, bi-weekly, monthly). The information reported and shared with AFIOH describes results from the individual MEDCENS and does not include demographic information at this time.

Week 04 overview. 48 specimens were collected and tested during Week 04. Thirteen percent (n=6) were positive for a respiratory virus (2 influenza B; 2 RSV; and 2 adenovirus).

Season overview: Since 02 October 2005, **2,207** specimens were collected and tested. Seventy-eight percent (n=1,713) were negative and 22% (n=494) were positive for a respiratory virus (132 influenza A; 6 influenza B; 201 RSV; 40 parainfluenza; and 115 adenovirus). Of the specimens collected and tested, 6% were positive for an influenza virus (Graph 4.).

Duplicate data. At this time, 7 influenza A viruses are identified in both the AFIOH report and Army MEDCEN report. Both TAMC and LRMC send selected positive specimens to AFIOH for sub-typing. All 7 influenza isolates collected from Tripler AMC have been identified as A/H3N2.

Graph 4. 2005-2006 ARMY MEDCEN Viral Respiratory Summary*

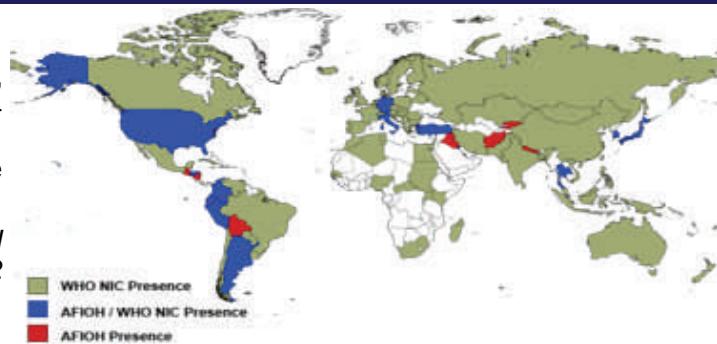


* C = Culture positive ; R = Rapid test positive

Contributions to National and Global Influenza Surveillance

It is important to note that although a country is highlighted, surveillance may be limited in scope. AFIOH provides surveillance data from 21 countries - 8 countries (Bolivia, El Salvador, Guatemala, Iraq, Kyrgyzstan, Nepal, Nicaragua, and Qatar) are not otherwise included in the current WHO network.

Note: Map describes countries submitting specimens to AFIOH and does not include all DoD contributing countries (i.e., NAMRU-2 and NAMRU-3 surveillance described on page 7).



Data Sharing

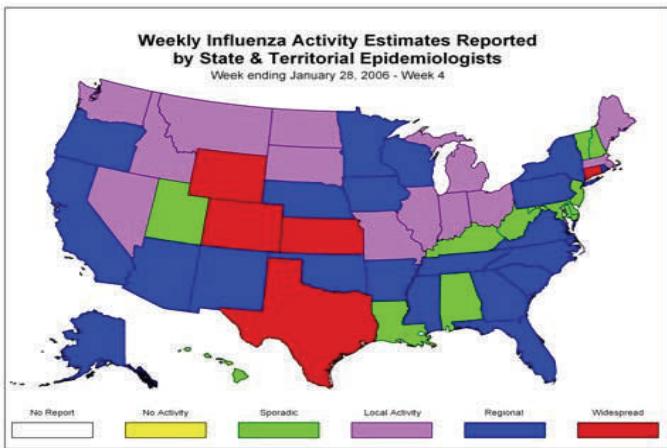
AFIOH electronically reports data to CDC using the Public Health Laboratory Information System (PHLIS). The data shared is incorporated into WHO's and CDC's influenza surveillance summaries. Additionally, data from Texas military sites are reported to the Texas Department of State Health Services (TDSHS).

CDC / WHO Influenza Surveillance

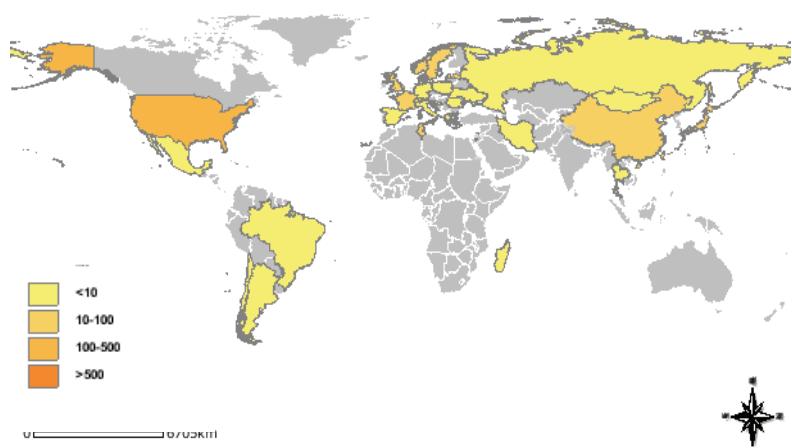
CDC reported influenza activity continuing at the same level as recent weeks during Week 04. Of the specimens tested, 12% were positive for an influenza virus (see CDC map below). Since 02 October 2005, a total of 6.7% of specimens have tested positive for influenza in the United States.

****WHO data may vary slightly from week to week. Please refer to [WHO's website](#) for detailed information regarding the WHO Influenza Surveillance data.**

CDC U.S. Influenza Surveillance Map¹



WHO International Influenza Surveillance Map²



1. National Influenza Activity (CDC): <http://www.cdc.gov/ncidod/diseases/flu/weeklychoice.htm>

2. International Influenza Activity (WHO): <http://gamapserver.who.int/GlobalAtlas/home.asp>

Avian Influenza Updates

Human Avian Influenza. 165 cases of lab-confirmed avian influenza (53% case fatality rate). The table was gathered from the [WHO website](#) on 06 February 2006 and has been updated as of 6 February 2006.

Country	2003		2004		2005		2006		Total	
	cases	deaths								
Cambodia	0	0	0	0	4	4	0	0	4	4
China	0	0	0	0	8	5	2	2	10	7
Indonesia	0	0	0	0	17	11	6	5	23	16
Iraq	0	0	0	0	0	0	1	1	1	1
Thailand	0	0	17	12	5	2	0	0	22	14
Turkey	0	0	0	0	0	0	12	4	12	4
Viet Nam	3	3	29	20	61	19	0	0	93	42
Total	3	3	46	32	95	41	21	12	165	88

Total number of cases includes number of deaths.

WHO reports only laboratory-confirmed cases.

DoD Global Influenza Surveillance Program Background

DoD-GEIS Influenza Surveillance Network

The DoD Global Influenza Surveillance Program was established by the Global Emerging Infections Surveillance and Response System (GEIS) in 1997. The program established an influenza surveillance network, which includes the Air Force Influenza Surveillance Network (global influenza surveillance established in 1976), Navy (recruit adenovirus surveillance established in 1996), and the DoD overseas medical research facilities (i.e., the Naval Medical Research Unit located in Cairo, Egypt [NAMRU-2] and the Naval Medical Research Unit located in Jakarta, Indonesia [NAMRU-3]).

AFIOH Influenza Surveillance Network

In 1976, the US Air Force Medical Service began conducting routine lab-based surveillance of influenza throughout the world. Efforts were expanded when it became part of the DoD-GEIS influenza surveillance network in 1997. AFIOH manages the Air Force surveillance program that includes global influenza surveillance among DoD beneficiaries at 43 tri-service sentinel sites (including deployed locations in Iraq, Qatar, Kuwait, and Kyrgyzstan), several non-sentinel sites, two DoD overseas medical research laboratories (the Armed Forces Research Institute of Medical Sciences located in Bangkok, Thailand [AFRIMS], and the U.S. Naval Medical Research Center-Detachment [NMRC-D] located in Lima, Peru) that collect specimens from local residents in Nepal, Thailand, Argentina, Bolivia, Ecuador, Peru, and Colombia, and the US Army Center for Health Promotion and Preventive Medicine-West (CHPPM-W), that collect specimens from local residents in El Salvador, Guatemala, and Honduras.

Sentinel Site Surveillance

Sentinel site surveillance describes specimens submitted by the 43 sentinel sites using the protocol of collecting 6-10 specimens each week from patients meeting the ILI case definition (**fever $\geq 100.5^{\circ}\text{F}$ and cough or sore throat**) and completing the "Influenza Surveillance Questionnaire" (see [our website](#) to review the questionnaire and the Sentinel Site Surveillance Report). Two sentinel sites, Tripler Army Medical Center (AMC), located in Hawaii, and Landstuhl Regional Medical Center (RMC), located in Germany, send selected influenza positive specimens to AFIOH to be further characterized. These sites are major medical centers and have established laboratories capable of detecting influenza. Their involvement in the DoD-wide program is valued due to their mission and geographical location.

Processing Methods

Specimens are processed in BSL-2 conditions (BSL-3 available) and tested for influenza, parainfluenza, adenovirus, enterovirus, herpes simplex virus (HSV), and respiratory syncytial virus (RSV). Specimens are held up to 14 days before a negative result is given. All influenza isolates are typed as A or B and a portion are subtyped using hemagglutination-inhibition (HI) or polymerase chain reaction (PCR) procedures. A portion of these isolates undergo molecular sequencing.

2005-2006 Trivalent Influenza Vaccine Composition

Northern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)
- B/Shanghai/361/2002-like

2006 Southern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)*
- B/Malaysia/2506/2004

*The currently used vaccine virus is A/New York/55/2004

This report was prepared on **06 February 2006**. For an expanded view of the information in this report, visit our website at <https://gumbo.brooks.af.mil/pestilence/Influenza/>. Also available on our website is a list of previous weekly surveillance reports, program information for sentinel sites (including an educational briefing and instruction pamphlets for clinic staff), and an overview of historical data.

Please visit the [DoD-GEIS website](#) for an overview of influenza surveillance at all collaborating DoD-GEIS organizations.

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